

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing: 29 March 2001 (29.03.01)	
International application No.: PCT/DK00/00517	Applicant's or agent's file reference: 19536
International filing date: 19 September 2000 (19.09.00)	Priority date: 21 September 1999 (21.09.99)
Applicant: MERRILD, Bente, Käthe, Yonne et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International preliminary Examining Authority on:
25 January 2001 (25.01.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer: J. Zahra Telephone No.: (41-22) 338.83.38
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK. 00/00517

A. CLASSIFICATION OF SUBJECT MATTER		
IPC7: A61F 13/06 According to International Patent Classification (IPC) or in both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
IPC7: A61F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
SE,DK,FI,NO classes as above		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5497789 A (ZOOK), 12 March 1996 (12.03.96), abstract --	1-10
A	FR 1176074 B1 (JUAN LESIUK), 3 April 1959 (03.04.59), figures 5,6, claim 1 --	1-10
A	JP 9099004 A (CHOYO KK)1997-07-15 (abstract) World P atents Index (online). London, U.k:Derwent Publicat ions, Ltd: (retrieved on 2000-12-14).Retrieved from; EPO WPI Database. DW199725, Accession No.98-149073; --	1-10
A	SE 464906 B (AB IE-KLINIKEN), 1 July 1991 (01.07.91), figure 1, abstract --	1-10
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "I" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
14 December 2000		20-12-2000
Name and mailing address of the ISA Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86		Authorized officer Ingrid Falk/js Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 00/00517

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5823195 A (SHOOK ET AL), 20 October 1998 (20.10.98), abstract -----	1-10

INTERNATIONAL SEARCH REPORT
Information on parent family members

04/12/00

International application No.
PCT/DK 00/00517

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	5497789	A	12/03/96	NONE	
FR	1176074	B1	03/04/59	NONE	
SE	464906	B	01/07/91	SE 8903007 A	14/03/91
US	5823195	A	20/10/98	NONE	

(19) World Intellectual Property Organization
International Bureau



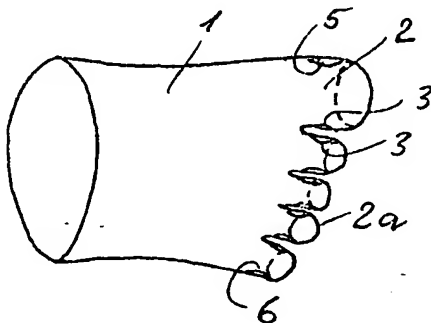
(43) International Publication Date
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(10) International Publication Number
WO 01/21119 A1

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- (22) International Filing Date:
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Ringkøbing (DK).
- (74) Agent: MAGNUS JENSENS SUCCESSORS; P.O. Box
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AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,
DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
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LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
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- (84) Designated States (*regional*): ARIPO patent (GH, GM,
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patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG,
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: SOCK OR STOCKING FOR THERAPEUTIC USE



(57) Abstract: The invention relates to a foot-shaped sock or stocking for therapeutic use, made of thin, flexible and preferably also elastic material. To the inner surface of the toe cavities of said foot-shaped sock or stocking are fastened a number of elastomeric, pad-like inserts that relieve pressure on the inner side of the toe. The elastomeric insert according to the invention are suitably made of a soft, almost viscous plastic, for instance of a known silicone-based gel type, said inserts being fastened on the inner side of the bandage by thermal welding, sewing, adhesion or in another suitable way. The sock or stocking itself is made of nylon or an equivalent thin and elastic textile, preferably of a type which has an appropriate permeability to vapour, and which occupies as little space and causes as little inconvenience as possible, so that the bandage can be worn under ordinary footwear.

WO 01/21119 A1

Sock or Stocking for Therapeutic Use.

The invention is a sock or stocking for therapeutic use, more specifically as defined in the introduction to claim 1.

It is known that corns, bunions and related pressure sore problems on the feet can be treated with pressure-relieving dressings consisting of a soft elastomeric pad which is held in position over the affected point on the foot with the aid of an elastic bandage or a plaster. The exposed and often highly pressure-sensitive part of the foot is thus protected against direct external pressure and against the irritation which, for example, can be caused by friction against the shoe, or, in the case of a pressure sore on the inner side of a toe, by rubbing against the neighbouring toe. The elastomeric insert or pad is usually made of a soft, almost viscous plastic. This plastic, which, for example, can consist of a silicone-based gel or another appropriate elastomer, is characterised by being extremely soft and workable, and ensures an optimal relief of pressure via this property and alleviation at the point of tenderness. The insert is usually shaped (prefabricated) as a flat circular piece which is placed over the tender point and fixed with the aid of the bandage as specified above. The insert or pad is referred to below as a pad.

The known technique is usable for the treatment of a single bunion or a single pressure sore of limited physical extent, but in practice it is a problem that the bandage used to fix the pad is often very bulky, as a result of which the dressing itself can be a source of irritation and can, at worst, cause new pressure sores. The known treatments for relief of pressure are unsuitable for the prophylactic treatment of patients who are known to have a substantial risk of developing pressure sores on the feet, such as patients with diabetes, heart patients and patients with paralysis, because prophylactic use of the known forms of treatment will of its very nature assume a large number of individual dressings and pads on the foot at the same time, and this is of course not possible in practice without major inconvenience for the patient.

U.S. patent no. 5,823,195 describes a therapeutic stocking with two ankle inserts. The two ankle inserts protect the ankle and the area around it down to the heel against the formation of sores. The elastic stocking ensures an even pressure distribution over the relevant part of the foot. The ankle inserts are made of a silicone elastomer and are hydrophobic. For obvious reasons the therapeutic stocking is unsuitable for use in prophylactic treatment to prevent pressure sores between the toes. The ankle inserts are placed in the therapeutic stocking as loose inserts. In practice this is done by the patient first putting on the stockings, after which the inserts are placed in them. The procedure is laborious and means that many patients, for example those with restricted ability to move or with paralysis, will have difficulty completing the task without assistance.

The object of the invention was to devise an improved form of pressure-relieving bandage or dressing which, based on known forms of treatment using point-wise relief of pressure on particularly exposed areas of the foot, would enable simultaneous relief of pressure at a number

of points or areas of the foot. An attempt was also made to find a solution which can be used in everyday life as normal preventive treatment for the patients at special risk discussed above, so that these patients' problems with pressure sores on the feet and between the toes can be prevented simply and effectively. The invention's pressure-relieving bandage must be easy to put on and take off, the bandage must be able to be worn discreetly under the clothing (under stockings or similar), and the bandage may not cause discomfort or other forms of inconvenience to patients. These and other benefits are achieved in the invention by equipping the dressing as specified in the characterising part of claim 1.

The new element in the invention is that a number of elastomeric, pad-like inserts are fastened, opposite the area(s) of the foot on which pressure is to be relieved, on the inner side of the foot-shaped sock or stocking, which is appropriately made of thin flexible and mainly also elastic material (textile of natural or artificial material). With a single bandage, the patient can thus gain pressure relief in a single action at all points on the foot which are liable to the formation of sores (pressure sore problems) or which are tender or exposed to pressure for other reasons. The bandage is simple for the patient to apply, thanks to the textile material's elasticity and the bandage's foot-shaped form. The elastomeric inserts attached to the inner side of the bandage will immediately sit "correctly" in relation to the areas of the foot which are exposed to pressure when the bandage is pulled on, and in particular the pads which are to protect the inner sides of the toes and the outer sides of the joints are positioned correctly solely because of the bandage's "foot shape". During use, the bandage ensures that the pads are held in their correct relative positions and that the pads do not shift unintentionally relative to their various pressure points. The bandage's main use will be for prophylactic purposes.

The invention's elastomeric inserts are suitably made of a soft, almost viscous plastic, for example a known silicone-based gel-like type. Alternatively, the insert can be made of foamed plastic, foam rubber, natural rubber or another appropriate material. The elastomeric inserts are fastened to the inner side of the bandage by thermal welding, sewing, adhesion or other appropriate method. The sock or stocking itself is made of NYLON or an equivalent thin and elastic textile, mainly of a type with a suitable permeability to water vapour and which takes as little space and causes as little inconvenience as possible so that the bandage can be worn under ordinary footwear (socks, stockings, shoes etc.) without inconveniencing the patient.

In one preferred embodiment of the invention, the bandage is equipped with separate cavities for the individual toes, that is, cavities analogous to the "fingers" in a glove. The inner sides of these toe cavities carry elastomeric inserts dimensioned for therapeutic pressure relief on the inner sides of the toes, that is, in the spaces between the toes. Experience has shown that these areas of the feet are highly susceptible to the formation of pressure sores. The bandage makes it possible to relieve the pressure on the exposed areas in a very gentle and yet effective

manner, without making the bandage bulky and uncomfortable to wear. The toe cavities are appropriately open at the ends, so that the bandage terminates at the toe's outer joint. In popular terms, the toe ends of the bandage are cut off. From the toes, the bandage extends backwards to about the middle of the forefoot. The bandage is thus shaped like a half-sock. In this embodiment the bandage is extremely comfortable for the patient to wear, and the price of manufacture for the bandage is the lowest possible.

Examples of preferred embodiments of the bandage according to the invention are given in claims 5-8. The bandage itself can be shaped like a full sock, a half sock or a knee-high stocking as required, and the elastomeric inserts can be freely placed in the bandage according to where there is a need for pressure relief. Claim 8 concerns an embodiment equipped with full foot lamina, that is, where the elastomeric insert almost forms an internal sole in the bandage. This form of therapeutic stocking is used with advantage by patients with fallen arches.

To increase the therapeutic effect of the bandage, the invention makes it possible to supplement the pressure-relieving effect with some form of medication. This requires the measures specified in claims 9 and 10, which consist of the elastomeric inserts containing a drug which is released successively to the patient during the treatment, either by diffusion, evaporation or otherwise dissolving. Under the invention the drug can be a hormone, an antibiotic e.g. for the healing of sores, a morphine preparation to treat pain in combination with the soothing effect of the pad, or other appropriate medication.

A more detailed description of the invention is now given in association with the drawings, of which

Fig. 1 shows a forefoot bandage according to the invention with pressure pads inserted between the toes, viewed obliquely from the front, in use on a patient.

Fig. 2 The same separately, viewed obliquely from above.

Fig. 3 The forefoot bandage viewed directly from the front.

Fig. 4 A magnified section which shows a toe section of the bandage with associated pressure pads.

Fig. 5 The same in cross-section.

Fig. 6 The same in an embodiment with circular ring-shaped pressure pad which completely surrounds the toe.

Fig. 7 A stocking-shaped, knee-length bandage according to the invention viewed obliquely from the side.

Fig. 8 The underside of the same with the foot lamina insert marked.

In the embodiment shown in Figs. 1-5, the sock or stocking consists principally of an elastic bandage 1 in the shape of a "foot glove", designed to cover the forefoot from the outer joints of the toes to about the middle of the forefoot as shown. The bandage is called a forefoot sock.

The bandage, which is made of an elastic textile material (NYLON or equivalent), has separate

"fingers" for the toes, that is, cavities 2 in which the toes fit when the stocking is put on. These "fingers" or cavities 2 are open at the ends 2a, so that the outer joints of the toes are not covered by the bandage. Experience shows that the outer joints seldom suffer pressure sores or similar problems.

The bandage is equipped on the inner side with elastomeric inserts 3 at the points where pressure on the foot and the toes is to be relieved. In the embodiment shown there are several separate inserts 3 in the actual toe cavities 2, designed to relieve the pressure of the inner sides of the toes against each other. The inserts are shaped as circular or rectangular pads which are fastened to the inner side of the bandage by sewing, thermal welding or adhesion. Alternatively, the inserts on the toe cavities 2 can be ring-shaped (insert shown in 4) to completely encircle the toe when the bandage is put on (Fig. 6). Inserts placed opposite bunions, i.e. on the outer sides of the big and the little toes, can also be used in the forefoot stocking in question (inserts 5 and 6).

Figs. 7 and 8 show the bandage in a knee-length embodiment 7, but still with separate cavities for the toes which are open at the ends 2. Apart from the toe inserts 3 already discussed, the knee-length stocking can be equipped with inserts 8 opposite the heel and opposite both ankle protuberances. In a special embodiment this knee-length stocking can also be equipped with a full foot lamina 9 of elastomeric material designed for therapeutic treatment of patients with fallen arches. In other embodiments not figured here, the bandage can be shaped like a short sock and fitted with inserts combined in various ways according to the patient's individual needs. The inserts can, as already discussed, contain a drug which is successively released during the treatment via the pad's direct contact with the skin.

PATENT CLAIMS

1. Sock or stocking for therapeutic use, where the therapeutic treatment consists essentially of a partial covering and relieving of pressure on particularly exposed points or areas of the foot, using a pressure-relieving pad of soft elastomeric material which is placed over the affected area of the foot and fixed with the aid of an elastic bandage which surrounds the foot or at least that
2. part of the foot containing the exposed (tender) point, and which surrounding bandage is comprised of an essentially foot-shaped sock or stocking 1, 7 made of thin flexible and mainly also elastic material (textile of natural or artificial fibres), characterised by the fastening of a number of elastomeric, pad-like inserts 3, 5, 6 to the inner surface of the toe cavities in the foot-shaped sock or stocking in order to relieve pressure on the inner sides of the toes.
2. Sock or stocking as defined in claim 1, characterised by the elastomeric inserts being made of a soft, almost viscous plastic, for example of a known silicone-based gel type, which inserts are fixed on the inner side of the bandage by thermal welding, sewing, adhesion or in another suitable manner.
3. Sock or stocking as defined in claim 1, characterised by the sock (1) or the stocking (7) itself being made of NYLON or an equivalent thin and elastic textile, mainly of a type which has an appropriate permeability to water vapour and which occupies as little space and causes as little inconvenience as possible.
4. Sock or stocking as defined in claims 1, 2 or 3, characterised by the bandage, i.e. the foot-shaped sock or stocking, being designed with separate cavities (2) for the individual toes (i.e., cavities analogous to the "fingers" in a glove), and the placing of elastomeric inserts (3) on the inner sides of these cavities designed for therapeutic relieving of pressure on tender points on the toes, mainly in the spaces between the toes.
5. Sock or stocking as defined in claim 4, characterised by the toe cavities in question (2) being open at the ends (2a), the bandage terminating at the outer joints of the toes so that the outer joints of the toes with toenails protrude beyond the bandage (1), that elastomeric inserts are positioned between all toes, and mainly also opposite the bunions on the inner and outer sides of the forefoot, and that the bandage extends back to about the middle of the forefoot (Fig. 1).
6. Sock or stocking as defined in claims 4 or 5, characterised by the elastomeric inserts (4) in the toe cavities (2) each being a circular, ring-shaped encircling of the toe in question.

7. Sock or stocking as defined in one or more of claims 4, 5 or 6, characterised by the bandage being prolonged backwards into an actual sock, so that the bandage both encircles the forefoot and the heel and that various inserts are placed in the sock in addition to the toe inserts (3) according to the patient's needs, which inserts can, for example, include: one or more inserts
5 (8) opposite the heel, an insert for the entire length of the sole (lamina insert 9), and inserts opposite both ankle protuberances (inserts 8).

8. Sock or stocking as defined in one or more of claims 4-7, characterised by the bandage having an increased length, mainly with termination immediately below knee height, i.e., as a
10 knee-length stocking (7).

9. Sock or stocking as defined in claims 1 and 2, characterised by the elastomeric inserts containing a drug which is successively released during the therapeutic treatment either by diffusion, evaporation or otherwise dissolving.
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10. Sock or stocking as defined in claim 9, characterised by the drug in question being a hormone, an antibiotic e.g. to heal sores, a morphine preparation for the treatment of pain in combination with the soothing effect of the pad, or other medication appropriate to the purpose.
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1/1

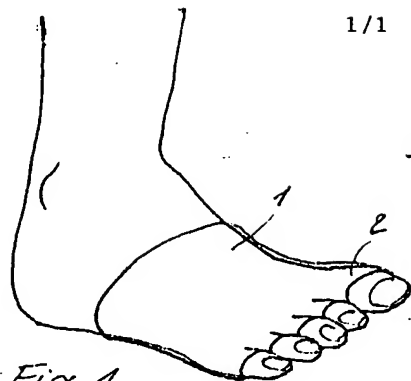


Fig. 1

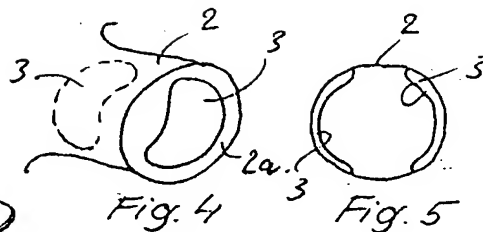


Fig. 4

Fig. 5

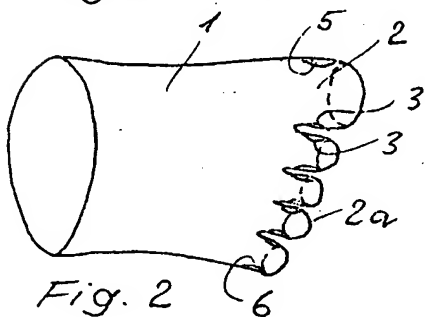


Fig. 2

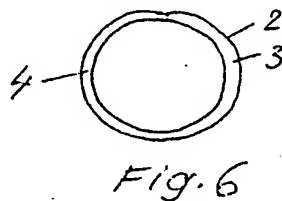


Fig. 6

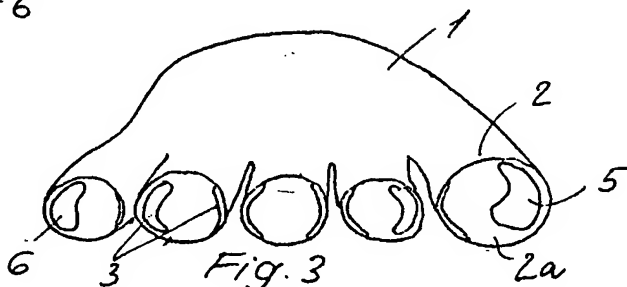


Fig. 3



Fig. 7

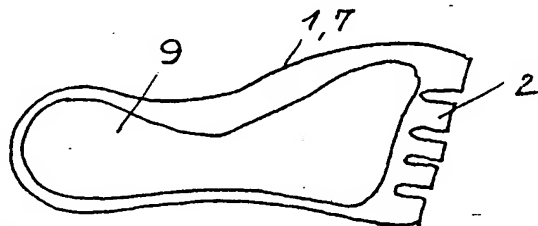


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 00/00517

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A61F 13/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5497789 A (ZOOK), 12 March 1996 (12.03.96), abstract --	1-10
A	FR 1176074 B1 (JUAN LESIUK), 3 April 1959 (03.04.59), figures 5,6, claim 1 --	1-10
A	JP 9099004 A (CHOYO KK)1997-07-15 (abstract) World P atents Index (online). London, U.k:Derwent Publicat ions, Ltd: (retrieved on 2000-12-14).Retrieved from; EPO WPI Database. DW199725, Accession No.98-149073; --	1-10
A	SE 464906 B (AB IE-KLINIKEN), 1 July 1991 (01.07.91), figure 1, abstract --	1-10

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

14 December 2000

20-12-2000

Name and mailing address of the ISA:

Swedish Patent Office

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Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 00/00517

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5823195 A (SHOOK ET AL), 20 October 1998 (20.10.98), abstract -- -----	- 1-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

04/12/00

International application No.

PCT/DK 00/00517

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	5497789	A	12/03/96	NONE	
FR	1176074	B1	03/04/59	NONE	
SE	464906	B	01/07/91	SE 8903007 A	14/03/91
US	5823195	A	20/10/98	NONE	

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

REC'D 11 JAN 2002

WIPO

PCT

(PCT Article 36 and Rule 70)

12

Applicant's or agent's file reference 19536	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DK00/00517	International filing date (day/month/year) 19.09.2000	Priority date (day/month/year) 21.09.1999
International Patent Classification (IPC) or national classification and IPC ⁷ A61F 13/06		
Applicant Merrild, Bente Käthe Yonne et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability: citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 25.01.2001	Date of completion of this report 19.12.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Ingrid Falk / MRO Telephone No. 08-782 25 00

Form PCT/IPEA/409 (cover sheet) (January 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DK00/00517

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement) under article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language English which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheet/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DK00/00517

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-10</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-10</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-10</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Cited documents:

- (1) US 5497789 A (ZOOK)
- (2) FR 1176074 B1 (JUAN LESIUK)
- (3) JP 9099004 A (CHOYO KK)
- (4) SE 464906 B (AB IE-KLINIKEN)
- (5) US 5823195 A (SHOOK ET AL)

The documents cited in the International Search Report represent background art.

The invention defined in claims 1-10 is not disclosed by any of these documents.

None of the cited documents gives any indication towards the claimed sock or stocking for therapeutic use. No relevant combination of the cited documents would lead a person skilled in the art to the invention defined in claims.

Therefore, the invention defined in claims 1-10 is novel and is considered to involve an inventive step. It is also considered to be industrially applicable.

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REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

* Title has changed see 188

For receiving Office use only

International Application No. **PCT/DK 00/00517**

International Filing Date **19 SEPTEMBER, 2000**

 **Danish Patent and Trademark Office**
Name of receiving Office and PCT International Application

Applicant's or agent's file reference (if desired) (12 characters maximum) **19536**

Box No. I TITLE OF INVENTION

[Sock or stocking for therapeutical use]*

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

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DK-6950 Ringkøbing

☒ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:

DK

State (that is, country) of residence:

DK

This person is applicant for the purposes of:



all designated States



all designated States except the United States of America



the United States of America only



the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

NIELSEN, Ludvig Nikolaj
Torvegade 14
DK.6950 Ringkøbing

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

DK

State (that is, country) of residence:

DK

This person is applicant for the purposes of:



all designated States



all designated States except the United States of America



the United States of America only



the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:



agent



common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

MAGNUS JENSENS SUCCESSORS
EUROPEAN PATENT ATTORNEYS
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+45 44996556

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Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, MZ Mozambique, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|--|--|
| <input checked="" type="checkbox"/> AE United Arab Emirates | <input checked="" type="checkbox"/> LC Saint Lucia |
| <input checked="" type="checkbox"/> AG Antigua and Barbuda | <input checked="" type="checkbox"/> LK Sri Lanka |
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LR Liberia |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MA Morocco |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BZ Belize | <input checked="" type="checkbox"/> MW Malawi |
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| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CR Costa Rica | <input checked="" type="checkbox"/> NZ New Zealand |
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| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> RO Romania |
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| <input checked="" type="checkbox"/> DM Dominica | <input checked="" type="checkbox"/> SD Sudan |
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| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SG Singapore |
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| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TZ United Republic of Tanzania |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
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| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZA South Africa |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | |
| <input checked="" type="checkbox"/> KR Republic of Korea | |
| <input checked="" type="checkbox"/> KZ Kazakhstan | |

Check-box reserved for designating States which have become party to the PCT after issuance of this sheet:



Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM ☐ Further priority claims are indicated in the Supplemental Box.

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) 21 SEP 1999	PA 1999 01339 [1339/99]	DK		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):	Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):		
ISA/SE	Date (day/month/year)	Number	Country (or regional Office)

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 3
description (excluding sequence listing part) : 3
claims : 2
abstract : 1
drawings : 1
sequence listing part of description : _____

Total number of sheets : 10

This international application is accompanied by the item(s) marked below:

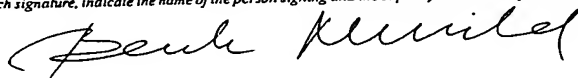
- ☒ fee calculation sheet
- ☐ separate signed power of attorney
- ☐ copy of general power of attorney; reference number, if any:
- ☐ statement explaining lack of signature
- ☐ priority document(s) identified in Box No. VI as item(s):
- ☐ translation of international application into (language):
- ☐ separate indications concerning deposited microorganism or other biological material
- ☐ nucleotide and/or amino acid sequence listing in computer readable form
- ☒ other (specify): DKPTO [S] [JAN 2000] 13. JAN 2000

Figure of the drawings which should accompany the abstract: 1-8

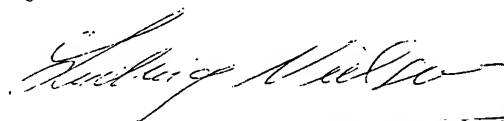
Language of filing of the international application:

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).



Bente Merrild



Ludvig Nielsen

For receiving Office use only		2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application: RO/DK 19 SEP 2000 (19.09.2000)		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA/SE	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

Date of receipt of the record copy by the International Bureau:	03 OCTOBER 2000	(03.10.00)
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1/1

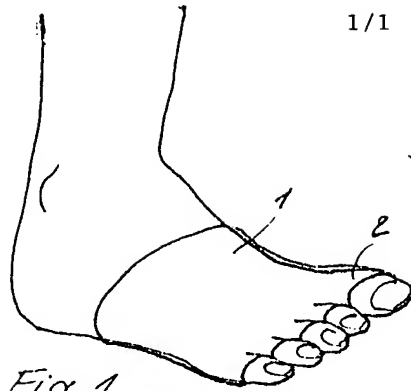


Fig. 1

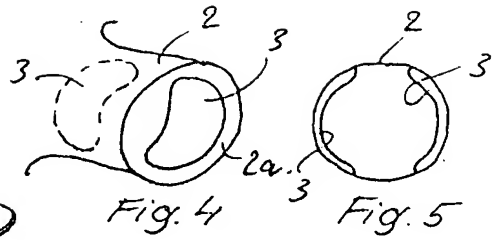


Fig. 4

Fig. 5

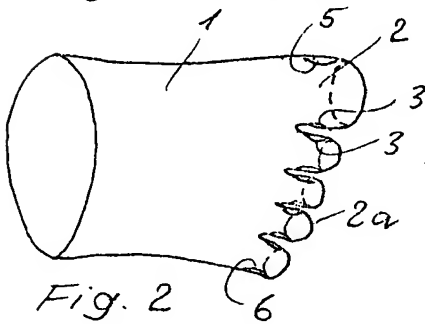


Fig. 2

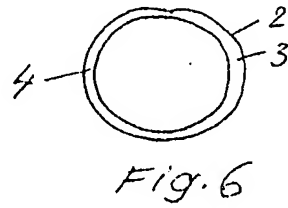


Fig. 6

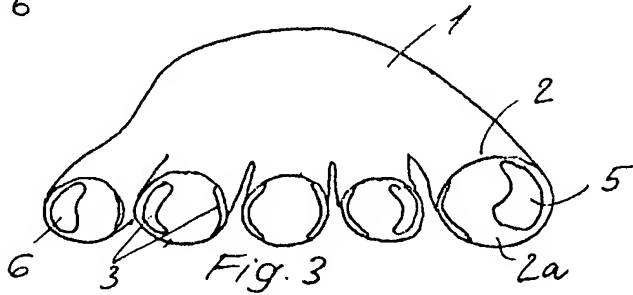


Fig. 3

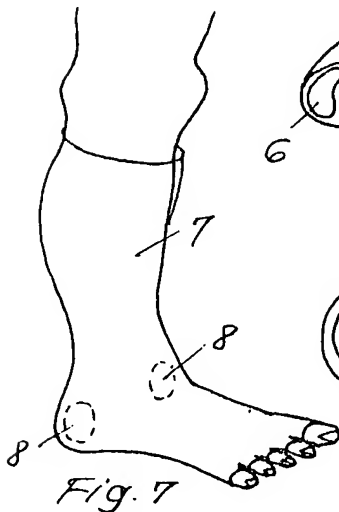


Fig. 7

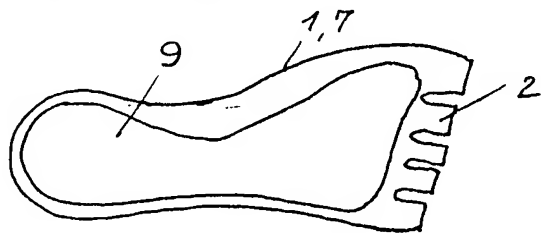


Fig. 8

Opfindelsen angår en sok eller strømpe til terapeutisk brug, og nærmere bestemt af den i indledningen til krav 1 angivne art.

- 5 Det er kendt at behandle knyster og lignende tryksårsproblemer på fødderne med trykaflastende forbindinger af en type, som består af et blødt, elastomert polster, som fastholdes over det angrebne punkt på foden v hj af en elastisk bandage eller v hj af et plaster. På denne måde beskyttes det udsatte og ofte meget trykfølsomme område af foden mod direkte tryk udefra og mod den irritation, som eksempelvis friktionen mod fodtøjet kan give anledning til, eller –såfremt der er tale om et
- 10 tryksår på indersiden af en tå- som gnidningen mod nabotåen kan forårsage. Det elastomere indlæg eller polster er sædvanligvis fremstillet af et blødt, nærmest viskøst formstof. Dette formstof, som eksempelvis kan bestå af en silikonebaseret gel eller en anden til formålet egnet elastomer, udmærker sig ved at være ekstremt blødt og formbart, og sikrer qua denne egenskab en optimal trykaflastning og lindring i det ømme punkt. Indlægget er sædvanligvis formet (præfabrikeret) som
- 15 en flad, cirkulær brik, som anbringes over det ømme punkt og fikseres v hj af bandagen som anført. Indlægget eller polstringen betegnes i det følgende som en pude.

- Til behandling af en enkelt knyst eller et enkelt tryksår med begrænset fysisk udstrækning er den kendte teknik for så vidt anvendelig. Dog er det i praksis et problem, at den til fiksering af puden
- 20 anvendte bandage ofte er meget omfangsrig, hvorved forbindingen i sig selv kan virke irriterende og i værste fald forårsage nye tryksår. Til profylaktisk behandling af de grupper af patienter, som man erfaringsmæssigt ved har stor risiko for at udvikle tryksår på fødderne, dette gælder bl a patienter med diabetes, hjertepatienter og patienter med lammelser, er de kendte behandlingsmidler til trykaflastning uegnede, idet en profylaktisk anvendelse af de kendte behandlingsmidler i sagens
- 25 natur ville forudsætte brug af et stort antal enkeltforbindinger og trykpuder på foden samtidig, og dette er naturligvis ikke muligt i praksis uden stor gene for patienten.

- Til grund for opfindelsen ligger den opgave, at anvise en forbedret form for trykaflastende bandage eller forbindelse, som med udgangspunkt i den kendte behandlingsform baseret på punktvis
- 30 trykaflastning af særligt udsatte områder af foden muliggør en samtidig trykaflastning i flere punkter eller områder af foden samtidig. Der tilstræbes nærmere bestemt en løsning, som kan anvendes i dagligdagen som normal forebyggende behandling blandt andet af den ovenfor omtalte gruppe af særligt udsatte patienter, hvorved disse patienters problemer med tryksår på fødderne og mellem tærne kan forebygges på en enkel og effektiv måde. Den trykaflastende bandage ifølge
- 35 opfindelsen skal være let at tage af op på, bandagen skal kunne bæres diskret under beklædningen (under strømper eller lignende), og bandagen må ikke medføre ubehag eller andre former for gener for patienterne. Dette og andre mål opnås ifølge opfindelsen ved at indrette forbindingen som angivet i den kendetegnende del af krav 1.

- 40 Det nye ved opfindelsen består i, at den omsluttende bandage udgøres af en i hovedsagen fodformet sok eller strømpe, som er fremstillet af tyndt, fleksibelt og fortrinsvis også elastisk materiale (tekstilmateriale af natur- eller kunststof), og at der på indersiden af denne fodformede sok eller strømpe er fæstnet et antal elastomere, pudeagtige indlæg ud for det eller de områder af foden, som skal trykaflastes. Med en enkelt bandage kan patienten på denne måde på én gang opnå en
- 45 trykaflastning i alle de punkter af foden, som er udsat for sårdannelse (tryksårsproblemer) eller som er ømme eller trykudsatte af anden årsag. Bandagen er let at iføre sig for patienten takket være tekstilmaterialets elasticitet og bandagens fodtilpassede form. De elastomere indlæg, som er fastsiddende på indersiden af bandagen, vil umiddelbart komme til at sidde "rigtigt" i forhold til de

trykudsatte områder af foden, når bandagen trækkes på, og specielt de puder, som skal beskytte indersiderne af tærne og ydersiderne af knoerne, positioneres korrekt alene som følge af bandagens "fodform". Under brugen sikrer bandage, at puderne holdes i korrekt indbyrdes stilling og at der ikke sker en utilsigtet forskydning i forhold til pudernes resp. trykpunkter. Fortrinsvis benyttes bandagen profylaktisk.

Formålstjenligt er de elastomere indlæg ifølge opfindelsen fremstillet af et blødt, nærmest viskøst formstof, eksempelvis af en kendt silikonebaseret, gelagtig type. Alternativt kan indlægget være fremstillet af opskummet formstof, skumgummi, naturgummi eller et andet til formålet egnet materiale. De elastomere indlæg er fæstnet til indersiden af bandagen ved termosvejsning, syning, klæbning eller på anden egnet måde. Sokken eller strømpen i sig selv er fremstillet af NYLON eller et tilsvarende tyndt og elastisk tekstilprodukt, fortrinsvis af en art, som har en passende permeabilitet for vanddamp, og som fylder og generer mindst muligt, således at bandagen kan bæres under almindelig fodbeklædning (sokker, strømper, fodtøj, etc) uden gene for patienten.

I en foretrukken udførelsesform ifølge opfindelsen er bandagen indrettet med indbyrdes adskilte hulrum for de enkelte tæer, dvs hulrum, som er analoge med "fingerne" i en fingerhandske. På indersiden af disse tå-hulrum er der placeret elastomere indlæg beregnet til terapeutisk trykaflastning af tæernes indersider, dvs i mellemrummene mellem tærne. Disse områder af fødderne er erfaringsmæssigt meget udsatte for tryksårddannelser. Bandagen gør det muligt at trykaflaste de udsatte områder på en meget skånsom og alligevel effektiv måde, og uden at bandagen derved bliver voluminøs og ubekvem at bære. Formålstjenligt er tå-hulrummene åbne i enderne, således at bandagen er afsluttet ved tæernes yderled. Populært sagt er bandagens tåender klippet af. Fra tærne strækker bandagen sig bagud på foden til omtrent midt på forfoden. Der er altså tale om en bandage i halvstrømpeform. Bandagen bliver i denne udførelsesform særlig bekvem for patienten at bære, ligesom fremstillingsprisen for bandage bliver mindst mulig.

Eksempler på foretrukne udførelsesformer for bandagen ifølge opfindelsen er angivet i kravene 5 til 8. Selve bandagen kan alt efter behovet have form som en helsok, en halvsok eller en knæstrømpe, og de elastomere indlæg kan placeres frit i bandagen alt efter, hvor der er behov for trykaflastning. Krav 8 omhandler en udførelsesform forsynet med fuld fodplade, dvs hvor det elastomere indlæg nærmest danner en indvendig sål i bandagen. Denne form for terapeutisk strømpe benyttes med fordel af patienter med mellemfodssynkning.

For at intensivere den terapeutiske virkning af bandagen er det ifølge opfindelse muligt at supplere den trykaflastende effekt med en vis form for medicinering. Hertil tjener de i kravene 9 og 10 anførte foranstaltninger, som består i, at de elastomere indlæg indeholder et farmaka, som afgives successivt til patienten under behandlingen, enten ved diffusion, afdampning eller afkvældning. Som farmakon kan der ifølge opfindelsen være tale om et hormonmiddel, et antibiotikum eksempelvis til sårheling, et morfinpræparat til smertebehandling i kombination med trykpudens lindrende virkning, eller et andet til formålet egnet medikament.

Opfindelsen skal forklares nærmere i forbindelse med tegningen, hvor

fig. 1 viser en forfodsbandage ifølge opfindelsen med trykpuder indsat mellem tærne, set skråt forfra i anvendelse på en patient,
fig. 2 Samme vist separat, set skråt ovenfra,
fig. 3 Forfodsbandagen set lige forfra,

fig. 4 et forstørret udsnit, som viser en tå-del af bandagen med tilhørende trykpuder,
 fig. 5 samme vist i tværsnit,
 fig. 6 samme vist i en udførelsesform med cirkulær, ringformet trykpude, som omslutter tåen helt,
 fig. 7 en strømpeformet, knælang bandage ifølge opfindelsen, set skråt fra siden, og
 5 fig. 8 undersiden af samme vist med markeret fodpladeindlæg.

I den på tegningens fig. 1 - 5 viste udførelsesform består sokken eller strømpen i det væsentlige af en elastisk bandage 1 formet som en "fod-handske" og beregnet til at dække forfoden fra tærnes yderled til omtrent midt på forfoden som vist. Bandagen benævnes en forfodsstrømpe. Bandagen, som er fremstillet af et elastisk tekstilmateriale (nylon eller tilsvarende), er formet med adskilte "fingre" for tærne, dvs hulrum 2, hvori tærne passer ind når strømpen tages på. Disse "fingre" eller hulrum 2 er åbne i enderne 2a, således at tærnes yderled holdes frie af bandagen. Yderleddene er erfaringsmæssigt sjældent udsatte for tryksårddannelser eller lignende problemer.

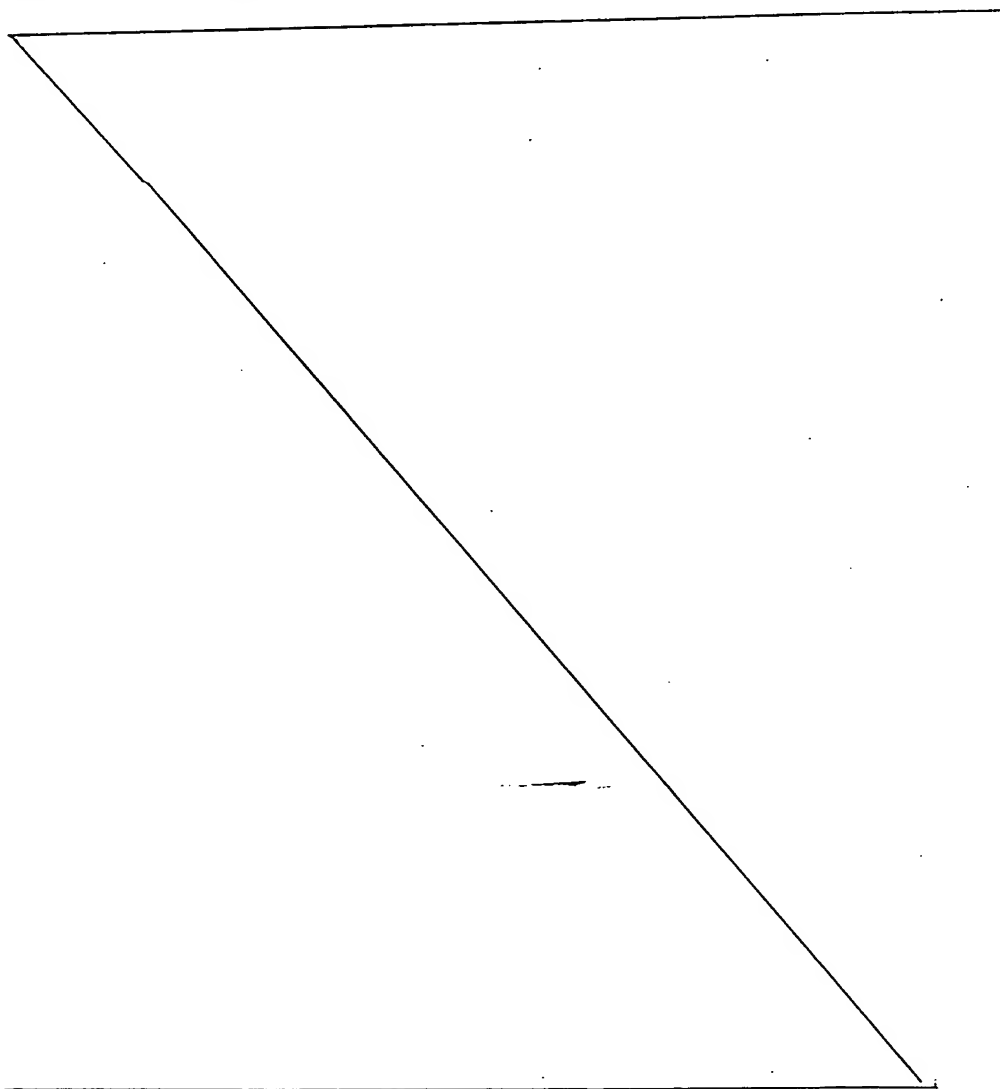
15 Bandagen er på indersiden forsynet med elastomere indlæg 3 i de punkter, hvor foden og tærne skal trykaflastes. I den viste udførelsesform findes der et antal indbyrdes adskilte indlæg 3 i selve tå-hulrummene 2 beregnet til trykaflastning af tærnes mod hinanden vendende indersider. Indlæggene har form som cirkulære eller rektangulære puder, der er fæstnet til indersiden af bandagen ved syning, termosvejsning eller klæbning. Alternativt kan indlæggene i tåhulrummene 2 være ringformede (indlæg angivet med 4) for hel omslutning af tåen, når bandagen tages på, se fig. 20 6. Også indlæg placeret ud for knysterne, dvs på ydersiden af storetåen og lilletåen, kan komme på tale ved den omhandlede forfodsstrømpe (indlæg angivet med 5 og 6).

I fig. 7 og 8 er bandagen vist i en udførelsesform som knæstrømpe 7, dog stadig med adskilte og i 25 enderne åbne hulrum 2 for tærne. Knæstrømpen kan, foruden de allerede omtalte tåindlæg 3, være forsynet med indlæg 8 ud for hælpartiet og ud for begge ankelknoer. I en særlig udgave kan denne knæstrømpe endvidere være forsynet med en fuld fodplade 9 af elastomært materiale beregnet til terapeutisk behandling af patienter med mellemfodsnedsænkning. I andre ikke viste udførelsesformer kan bandagen have form som en kort sok, og bestykningen med indlæg kan 30 kombineres på forskellig måde, alt efter patientens individuelle behov. Indlæggene kan, som allerede omtalt, indeholde et farmaka, som afgives successivt under behandlingen ved trykpudens direkte kontakt med huden.

Opfindelsen er ikke begrænset til de på tegningen viste og ovenfor beskrevne udførelsesformer. 35 Andre materialekombinationer og andre detailudformninger for den terapeutiske sok eller strømpe er tænkelig indenfor rammerne af denne opfindelse, ligesom princippet i sokken eller strømpen kan tænkes anvendt i andre terapeutiske sammenhænge end lige netop den ovenfor beskrevne. Eksempelvis er en anvendelse af selve princippet i opfindelsen tænkelig også til en terapeutisk handske, albuebeskytter eller eksempelvis en knæbeskytter.

PATENTKRAV

- 5 1. Sok eller strømpe til terapeutisk brug, hvor den terapeutiske behandling i det væsentlige består i en partiel tildækning og trykaflastning af særligt udsatte punkter eller områder af foden, hvorunder der benyttes en trykaflastende pude af blødt, elastomert materiale, som placeres over det pågældende område af foden og som fikseres v hj af et plaster eller en elastisk bandage (forbinding), som omslutter foden eller en tå på denne, afhængig af, hvor det udsatte (ømme) punkt befinder sig, *kendetegnet ved*, at den omsluttende bandage udgøres af en i hovedsagen fodformet sok eller strømpe (1, 7), som er fremstillet af tyndt, fleksibelt og fortrinsvis også elastisk



materiale (tekstilmateriale af natur- eller kunstfibre), og på hvis inderside der er fæstnet et antal elastomere, pudelignende indlæg (3, 4, 5, 6, 8) ud for det eller de områder af foden, som skal trykaflastes.

- 5 2. Sok eller strømpe ifølge krav 1, *kendetegnet ved*, at de elastomere indlæg er fremstillet af et blødt, nærmest viskøst formstof, eksempelvis af en kendt silikonebaseret gel-type, hvilke indlæg er fastgjort på indersiden af bandagen ved termosvejsning, syning, klæbning eller på anden egnet måde.
- 10 3. Sok eller strømpe ifølge krav 1, *kendetegnet ved*, at sokken (1) eller strømpen (7) i sig selv er fremstillet af NYLON eller et tilsvarende tyndt og elastisk tekstilprodukt, fortrinsvis af en art, som har en passende permeabilitet for vanddamp, og som fylder og generer mindst muligt, således at bandagen kan bæres under almindelig fodbeklædning (sokker, strømper, fodtøj, etc) uden væsentlig gene for patienten.
- 15 4. Sok eller strømpe ifølge krav 1, 2 eller 3, *kendetegnet ved*, at bandagen, dvs den fodformede sok eller strømpe, er udformet med indbyrdes adskilte hulrum (2) for de enkelte tæer (dvs hulrum, som er analoge med "fingrene" i en fingerhandske), og at der på indersiden af disse tå-hulrum er anbragt elastomere indlæg (3) beregnet til terapeutisk trykaflastning af ømme punkter på tærne, fortrinsvis i mellemrummene mellem tærne.
- 20 5. Sok eller strømpe ifølge krav 4, *kendetegnet ved*, at de omtalte tå-hulrum (2) er åbne i enderne (2a), idet bandagen er afsluttet ved tærnes yderled, således at tå-yderleddene med tå-neglene stikker udenfor bandagen (1), at der er anbragt elastomere indlæg mellem alle tæer, samt fortrinsvis også ud for knysterne på indersiden og ydersiden af forfoden, og at bandagen strækker sig bagud til omtrent midt på forfoden (fig. 1).
- 25 6. Sok eller strømpe ifølge krav 4 eller 5, *kendetegnet ved*, at de elastomere indlæg (4) i tå-hulrummene (2) hver for sig danner en cirkulær, ringformet omslutning af den pågældende tå.
- 30 7. Sok eller strømpe ifølge et eller flere af kravene 4, 5 eller 6, *kendetegnet ved*, at bandagen er forlænget bagud til en egentlig sok, således at bandagen både omslutter forfoden og hælen, og at der foruden tå-indlæggene (3) er placeret forskellige indlæg i sokken alt efter patientens behov, hvilke indlæg eksempelvis kan omfatte: et eller flere indlæg (8) ud for hælpartiet, et indlæg i hele fodundersidens udstrækning (trædepladeindlæg 9), og indlæg ud for begge ankelknoer (indlæg 8).
- 35 8. Sok eller strømpe ifølge et eller flere af kravene 4 - 7, *kendetegnet ved*, at bandagen har forøget længde, fortrinsvis med afslutning umiddelbart under knæhøjde, dvs som en knæstrømpe (7).
- 40 9. Sok eller strømpe ifølge krav 1 og 2, *kendetegnet ved*, at de elastomere indlæg indeholder et farmaka, som afgives successivt under den terapeutiske behandling enten ved diffusion, afdampning eller afkvældning.
- 45 10. Sok eller strømpe ifølge krav 9, *kendetegnet ved*, at det omtalte farmakon kan være et hormonmiddel, et antibiotikum eksempelvis til sårheling, et morfinpræparat til smertebehandling i kombination med trykpudens lindrende virkning, eller et andet til formålet egnet medikament.

SAMMENDRAG

Sok eller strømpe til terapeutisk brug

Opfindelsen angår en sok eller strømpe til terapeutisk brug, hvor behandlingen består i en partiel tildækning og trykaflastning af særligt udsatte punkter eller områder af foden, hvorunder der benyttes en trykaflastende pude af blødt, elastomert materiale, som placeres over det pågældende område af foden og fikseres v h j af et plaster eller en bandage, som omslutter foden eller en tå på denne, afhængig af, hvor det udsatte (ømme) område befinder sig.

Det nye ved opfindelsen består i, at den omsluttende bandage udgøres af en i hovedsagen fodformet sok eller strømpe, som er fremstillet af tyndt, fleksibelt og fortrinsvis også elastisk materiale (tekstilmateriale af natur- eller kunststof), og at der på indersiden af denne fodformede sok eller strømpe er fæstnet et antal elastomere, pudelignende indlæg ud for det eller de områder af foden, som skal trykaflastes.

Formålstjenligt er de elastomere indlæg ifølge opfindelsen fremstillet af et blødt, nærmest viskøst formstof, eksempelvis af en kendt silikonebaseret gel, som er fastgjort på indersiden af bandagen ved termosvejsning, syning, klæbning eller på anden egnet måde. Sokken eller strømpen i sig selv er fremstillet af Nylon eller et tilsvarende tyndt og elastisk tekstilprodukt, fortrinsvis af en art, som har en passende permeabilitet for vanddamp, og som fylder og generer mindst muligt, således at bandagen kan bæres under almindelig fodbeklædning (sokker, strømper, fodtøj, etc) uden væsentlig ubehag for patienten.